DOCUMENT RESUME

ED 477 800 SP 041 578

AUTHOR	Mizukami, Maria da Graca Nicoletti; Reali, Aline Maria de Medeiros Rodrigues; Reysa, Claudia Raimundo; de Lima, Emilia Freitas; Tancredi, Regina Maria Simoes Puccinelli
TITLE	Promoting and Investigating Professional Development of Elementary School Teachers: Contributions of a Six-Year Public School-University Collaborative Partnership.
PUB DATE	2003-04-00
NOTE	28p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 21-25, 2003). Contains small print.
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS	College Faculty; *College School Cooperation; Elementary Education; Elementary School Teachers; *Faculty Development; Foreign Countries; Higher Education; Inservice Teacher Education; Knowledge Base for Teaching ; *Partnerships in Education; Pedagogical Content Knowledge; Public Schools; *Reflective Teaching; *Teacher Collaboration; Teacher Knowledge
IDENTIFIERS	Collaborative Research; Knowledge Development

ABSTRACT

This paper describes efforts to promote professional development among Brazilian elementary teachers via a 6-year public school-university partnership, presenting theoretical and methodological frameworks, general research characteristics, and results. Researchers investigated how a constructive-collaborative intervention that examined reflection on teachers' practice in the workplace could be used to improve teaching. Elementary school professionals, university researchers, and subject area specialists collaborated to study teachers' reflections on diverse aspects of education, the teaching profession, and pedagogy. They developed a strategy for promoting and investigating learning and professional development processes. The teaching and learning experiences developed early in the project were diverse and sought to encompass different aspects of teacher work. By the fourth year, the group collectively constructed professional development focused on the school itself. Data were collected via participant observation, interviews, reflective diaries, student materials, school board meeting minutes, oral and written reports, documents, and PTA meetings. Teachers' thinking usually referred more directly to events than conceptual explanations. Some teachers began to base their individual analyses on situations as a whole instead of focusing on details and specifics of each event. The study highlighted the need for time and effective learning opportunities so that teachers could rethink not only their classroom roles, but also their pedagogical practice. (Contains 47 references.) (SM)

Reproductions supplied by EDRS are the best that can be made
from the original document.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Maria da Graça Nicoletti Mizukami

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PROMOTING AND INVESTIGATING PROFESSIONAL DEVELOPMENT OF ELEMENTARY SCHOOLTEACHERS: CONTRIBUTIONS OF A SIX-YEAR PUBLIC SCHOOL- UNIVERSITY COLLABORATIVE PARTNERSHIP[1,2]

ED 477 800

Maria da Graça Nicoletti Mizukami
Aline Maria de Medeiros Rodrigues Reali
Cláudia Raimundo Reysa
Emília Freitas de Lima
Regina Maria Simões Puccinelli Tancredi

Federal University of São Carlos – SP/Brazil

INTRODUCTION

Brazil is currently going through an intense period of educational reformation related to in-service and pre-service teacher education programs, motivated by several factors: standards and goals established by the World Bank; the adoption, on national level, of new curriculum standards (involving k-12 and references for teacher education programs of different levels of teaching); legal standards and demands for teacher certification; the recent literature about the nature of teachers' learning and development processes as well the results of the schooling process assessed by national and regional evaluation systems.

Two ways of certification for teaching coexist for elementary schoolteachers (first four grades of the Brazilian Fundamental Teaching): high school or undergraduate level. According to the new certification rules, all elementary school teachers must have undergraduate education by 2010. Considering that a high number of elementary schoolteachers only possess high school level certification efforts are being taken to provide these teachers with undergraduate education and certification in order to meet the standards established by the new public policies. The teacher education programs – carried on at the three levels of the Brazilian federation – have specificities and modalities that take into account different formative contexts. We are dealing, in such situations, with mixed teacher education models: they are, at the same time, pre-service and in-service teacher education programs. Diversified partnerships have been constructed between university and public schools aiming to face this concrete situation.

In this context it is also important to mention that the usual teacher education programs (offered either by the university or by specific high schools) can be considered as adopting a one-way perspective. The teacher education is centralized in the university and the schools only harbor the future teachers in some moments of the teacher in-service education. The schools and the schoolteachers that receive the future teachers are not co-educators. This model has been reconsidered in face of the current agenda for teacher education, in order to establish different

[1] Paper presented to the 2003 American Educational Research Association – Accountability for Educational Quality – Shared Responsibility, Chicago, Illinois, April 21-25, 2003.
[2] FAPESP – SP/Brazil

SP041579

BEST COPY AVAILABLE

kinds of partnerships between universities and schools (specially the public schools) and to create two way teacher education programs aiming a better and more realistic preparation for the teacher.

The research project here reported specifically relates to in-service teacher education and the school as a privileged space for improving learning and professional development processes. It was conducted by a public university in partnership with an elementary public school, both from the city of São Carlos/SP/Brazil, from August 1996 to January 2003, and concerned a thematic program of applied research called "Public Teaching", sponsored by the FAPESP - São Paulo Foundation for Research Support. The program aimed the improvement of the quality of teaching and schooling processes through an in-service teacher education program developed in the workplace.

The goals of the project were twofold: to build a knowledge base of teachers' learning and professional development processes and to define when, where and by what means, the participants will intervene in these processes with the goal of refining this knowledge. It was characterized by the development, in collaboration with the school community, **of intervention strategies**, which allowed the construction and implementation of a pedagogical process shared by its members as well as the consolidation of the professional autonomy of the teachers involved. Basically it intended to offer answers to the following general question: *To what extent a partnership process that considers the reflection on the pedagogical practice as its axis of development and implies interventions of constructive-collaborative nature in the workplace, allows us to know, understand and promote professional development processes of schoolteachers?*

A constructive-collaborative approach (Cole & Knowles, 1993) was adopted, which presumes that an improvement in teaching quality to overcome school and student failure implies the natural and voluntary participation of teachers in the discussion of alternative propositions aims to accomplish such goals. Such an approach implies, amongst other assumptions:

a) The concept of teachers' professional development considered as part of a continuum that seeks to establish connections between initial and continuing teacher education;

b) The valuing of the teachers' professional development processes, of contextual and organizational aspects, orientated towards change, and combining the individual and collective dimensions of the pedagogical activity;

c) The construction of teaching knowledge as a result of the dialectical relation between the individual and the collective;

d) The inquiry-reflection principle (Knowles, Cole, & Presswood, 1994), which, amongst others: facilitates the teachers' understandings about their pedagogical practices; considers the collaborative nature of the roles impersonated by their peers; acknowledges the specificity of the pedagogical practice as requiring non-standardized solutions; admits the influence of teachers' conceptions in the understanding of classroom events and in their teaching practice; enables the development of personal and professional autonomy;

e) ... new forms of partnership research [...] based on fundamental assumptions about the importance of mutuality in purpose, interpretation, and reporting and about the potency of multiple

perspectives. Also implicit in this model is the understanding that each partner in the inquiry process contributes particular and important expertise, and that the relationship between classroom teacher and the university researcher, for example, is multifaceted and ***not*** *powerfully hierarchical* (Cole & Knowles, 1993:478*);*

f) The need to establish a base knowledge that makes professional development possible;

g) The consideration of processes of pedagogical knowledge content construction in different subject matters;

h) The notion of school as an organization that learns;

i) The construction of teachers' professional empowerment processes;

j) The consideration of translations and transpositions of educational public policies related to schools and classrooms.

This report aims to offer an overview of the whole project, presenting some basic theoretical and methodological frameworks, the general characteristics of the research as well as some of the results obtained. Emphasis will be given in the intervention strategies, which characterize the collaborative partnership dynamic constructed by all participants – public school and university.

1. Theoretical Framework

The adopted orientations were drawn from literature, as well as research regarding: teachers' professional development processes; teachers' thinking; inquiry and collaboration in teacher education; communities of learning; the models of knowledge base for teaching and the pedagogical reasoning process; the reflection considered as a conceptual orientation; the learning-in-context theory and organizational learning. The elements of the orientation may be listed as the: nature of teaching and learning processes, based on constructivist/cognitivist approaches, emphasizing meta-cognition and processes of reflection and inquiry (Shulman, 1986, 1996; Cole & Knowles, 1993); nature of the cognitive processes involved in decision making and the attribution of meanings in schools, classes and other spaces of knowledge (Wasserman, 1993); individual and collaborative nature of different learning processes, emphasizing meta-cognition, conceptual changes/orientations and problem-solving (Baird, 1997); theoretical models related to the construction of a knowledge base for teaching and to the process of pedagogical reasoning, with emphasis on the construction of pedagogical content knowledge (Shulman, 1996, 1986); nature of personal theories of teachers (Clandinin & Connelly, 1996; Calderhead, 1996; Knowles, Cole & Presswood, 1994), with emphasis given to the importance of these theories in the construction and reconstruction of different kinds of knowledge; contributions of learning-in-context theories (Schoenfeld, 1997) and organizational learning (Argyris & Schön, 1996) in the understanding of teachers' professional development processes and of different mediation processes on knowledge transmission; possible impacts of public policies regarding pedagogical proposals in the practice of teachers (McDiarmid, 1995; Torres, 1999).

To learn to teach is a complex process that involves, amongst others, affective, cognitive, ethical, and performance related factors (Cole & Knowles, 1993). According to Calderhead (1993) coherent and comprehensive theoretical guidelines and a general theory of knowledge about professional learning that can enlighten the processes of professional development of teachers in ways to inform the construction of pre-service and in-service teacher education programs are yet to be formulated.

Studies on teachers' thinking, on reflective teaching, on knowledge base for teaching, on tacit/practical theories etc., although based on different theoretical and methodological orientation, have been pointing to the constructive dimension of the professional knowledge; to the fact that this knowledge is developed during teaching; and to the personal dimension added to this constructive process.

Studies have also indicated that teachers' knowledge, beliefs, and goals are fundamental elements in the determination of how they act in the classroom and why they act that way; learning to teach is a developmental process and requires time and resources so that teachers' modify their practice; that the modifications teachers need to accomplish in order to contemplate new social and political demands go beyond the learning of new techniques, implying conceptual revisions of the educational and instructional process and of the practice itself.

It is also known that: the needs of students are the focus of today's educational public policies; the structure and content of professional development programs must be determined by the teachers themselves; the educational programs need to be adapted to specific schools; adult learning processes are more related to practice than theory and that a support and professional growth environment is of extreme importance (Torres, 1998, 1999; Wittrock, 1986; Clark e Peterson, 1986; Darling-Hammond, 1994; Marcelo, 1998; Calderhead, 1996; Schoenfeld, 1997).

Current literature presents, amongst others, descriptive models of teaching processes; models of knowledge base for teaching and of pedagogical reasoning; descriptions of beliefs and types of knowledge of teachers; analytical models of narratives and stories constructed by teachers. The same literature, on the other hand, is reluctant to consider how multiple variables may shape and co-determine how the teachers act and why they act the way they do in the development of the instructional process (Schoenfeld, 1997).

Many researchers have offered important contributions to the development of a new epistemology of practice (even though that terminology is the focus of some discussion), which consider specific needs of teachers' professional development: Schön (1983, 1987, 1988), Elbaz (1983), Nóvoa (1992), Calderhead (1993), Knowles, Cole & Presswood (1994), Clandinin & Connelly (1996), Shulman (1987, 1988, 1996), Zeichner (1993), Doyle (1990), and Huberman (1993), amongst others.

Despite all the different theoretical and methodological orientations under which the theme is studied, *reflective teaching* expresses the preoccupation with personal experiences and practice in the professional development of teachers. The basic assumption of *reflective teaching* is that

teachers' beliefs, values, and hypotheses on teaching, subject matter, curricular content, students, learning, etc., enhance their practice. When the teachers describe, analyze, and make inferences about classroom events, they are creating their own pedagogical principles. The reflection would offer them the opportunity to gradually make their practical/implicit theory objective.

It is important to consider that *reflection* is not taken here as a synonym for *wise judgment*. It is well known that experience can lead to wrong learning and to the crystallization of inadequate and discriminatory practices.

It is agreed that in this work *reflection* is *conceptual orientation*, thus avoiding conflicting ideas for teaching. According to Valli (1992), despite their differences, researchers adopt the basic assumption that reflection is a conceptual orientation, admitting different variations (emphasis in specific content and emphasis in personal experiences, amongst others). Only a reflective paradigm, says Valli, has the power to integrate distinct components of teaching: reflective teachers base themselves on personal knowledge, professional knowledge, propositional knowledge, and technical knowledge. Another benefit of considering reflection as a conceptual orientation relates to the fact that reflection is not a natural disposition. Without an explicit commitment to reflection, reflection will probably be sporadic and superficial.

Shulman (1986, 1987) proposes two theoretical models for the investigation of the role of knowledge in teaching, for the foundations of knowledge base for teaching, for pedagogical processes of reflection and action involved in teaching: the *personal knowledge base* and the *process of pedagogical reasoning*. Both theoretical orientations consider different types of knowledge for teaching and the processes by which this knowledge is constructed and utilized.

By knowledge base we mean the body of understandings, knowledge, abilities and dispositions necessary for the effective teaching in specific situations (Wilson, Schulman, & Richert, 1987). Among the foundations of this knowledge base we have different kinds of knowledge that support the decision making process of teachers (Schulman, 1986, 1987): *specific content knowledge*; *general pedagogical knowledge*; *pedagogical content knowledge*.

According to Schoenfeld (1997), what a teacher can perform in one specific situation is fundamentally shaped by a group of intellectual resources that he or she brings to the teaching situation. This is called the *knowledge base*. The plans of action – in diverse levels – occupy a central position and can be used to activate the goals. This is a broad category that includes a variety of knowledge both general and classroom related, including the knowledge of interactive routines, considered by literature as being basic to teacher education processes: Shulman (1986, 1987), Calderhead (1996), Clark and Peterson (1986), Fenstermacher (1994), Darling-Hammond (1994).

Taking the contents of knowledge into consideration, literature has pointed to a broad variety of categories: personal practical knowledge (Elbaz, 1983; Connely & Clandinin, 1988), knowledge-in-action (Schön, 1983, 1987), professional knowledge (Calderhead, 1996; Tardif et al., 1991; Huberman, 1993) case knowledge (J.H Shulman, 1992; Shulman, 1992, 1996); educational

foundation knowledge (Grimmet & Erickson, 1988), metaphors (Clandinin, 1986), and many others equally important to the process of the professional development of teachers.

Schoenfeld (1997) adopts the same distinction made by Shulman. According to him, beyond the inventory of knowledge, a second basic point that permeates all the aforementioned categories refers to how the knowledge is accessed and used. This point is crucial to the elaboration of a teaching-in-context theory. The author considers that it is accepted by Psychology that

> ...people organize their experiences mentally via mental representations of familiar 'classes' of experience. The most common name for such abstraction is 'schema' (plural schemata); related terms are scripts and frames. Attached to a schema are its typical features, some knowledge related to it, and typical ways of behaving when that schema has been called to mind (Schoenfeld, (1997:25).

The main idea behind the schema is that the human being abstracts its world experiences and uses such abstractions as a means to perceive and interpret elements when interacting with them. To bring a particular item to mind, is to bring not only the knowledge related to it that the individual may possess, but also to bring beliefs and emotions along with it. An event that triggers particular beliefs can also trigger knowledge related to such beliefs. The notion of schemas is also present in Gimeno Sacristán (1991), who offers descriptions and understandings related to the professional learning of teaching.

The process of pedagogical reasoning (Shulman, 1987; Wilson, Shulman & Richert, 1987) consists in a process of reasoning and action involving six aspects common to the act of teaching: comprehension, transformation (critical interpretation, representation, adaptation, and consideration of specific cases), instruction, evaluation, reflection, and new comprehension. By means of such process, the professional knowledge is constructed.

In the realization of *the learning and teaching experiences*[3] considered here, we also adopted as theoretical reference the analyses of Giroux (1997) regarding the courses' objectives: micro and macro objectives. The *micro* objectives are usually limited by the specificity of the intentions related to the singularity of a given course. They are those imposed conceptions that constitute the nucleus of a given subject matter and define its course of investigation. The *macro* objectives offer, according to Giroux a classification system that help teachers and students to go beyond the contents of a given subject matter. They also offer students the necessary theoretical foundations that make it possible for them to establish connections among methods, contents, course and a broader social reality. We can emphasize, in this context, the importance of the relationship between micro and macro objectives. In this sense, according to Sacristan Gimeno (1995) what the students learn in the school situation – and what they also seize to learn – is broader than the conception of curriculum as a specification of all kinds of themes and contents. That is, the real curriculum is broader than any kind of 'document' in which are reflected objectives and plans.

[3] The interventions constructed collaboratively by the participants of this research were labeled "teaching and learning experiences".

2 - The Research – Methodological Orientation

By investigating the teachers' processes of professional learning and development, one of the primary goals of this project was to design and to implement a program that could engage the schoolteachers in their professional learning and development processes. This program was expected to bring improvements to both teachers and school and to be a permanent presence in the school's activities even after the research's end. It was also expected that the program would, in a short time, exert an impact on the learning and teaching processes developed in and by the school. The study contains characteristics of action-research, in the understanding of action oriented by research, and research based on action, reflection, decision-making processes, and self-evaluation (Bayne-Jardine, 1994). Reflecting the theoretical orientation, the methodological approach includes descriptive and analytical studies, follow up studies, ethnographic studies, case studies, and the use of several data sources (observation, participant observation, diary entries, interviews, document analysis etc.), pertinent to each of the issues studied.

The basic concern related to the understanding and promoting of teachers professional learning and development processes, expressed through the following questions, *To what extent a partnership process that considers the reflection on the pedagogical practice as its axis of development and implies interventions / actions of constructive-collaborative nature in the workplace allows us to know, understand and promote professional development processes of schoolteachers? To what extent does it constitute a strategy of modification for the pedagogical action, aiming the overcoming of the learning difficulties presented by the students of the elementary school?*, was investigated in **two phases**. The first phase encompassed the period from August 1996 to July 2000, and the second, the period from February 2001 to January 2003.

During the first four years of the development of the study (first phase), the specific question that guided the investigation was: *How could a constructive-collaborative intervention (that draws on the reflection on the teachers' practices in their workplace) be considered and used as a successful strategy for improving pedagogical actions in ways to overcome school, teacher, and student failures?*

Some specific research issues included:

a) Knowing the population of the school, identifying who fails, when, how, and in what circumstances, as a preliminary step so that collective pedagogical actions, coherent with the school's ethos may be constructed with school success as a goal;

b) Finding and exploring organizational spaces, taking the school culture into account, in order to consider (individually and collectively) teachers' beliefs and personal theories on curriculum and school knowledge;

c) Investigating the process of professional development of teachers in this different dimensions (cognitive, affective, moral, and technical), and curricular

components, revealing how teachers build their learning/professional development trajectories, seeking the proper identification of these trajectories, and, in that dynamic, the influence of broader personal, institutional, and contextual influences.

The research's main goals, in this phase, were to: a) acquire knowledge about professional development of teachers' and the best way to investigate such issue; b) acquire knowledge about the process of conceptual development (related to the teaching and learning processes and the educational phenomenon) and of practices made possible by the use of a constructive-collaborative approach; c) promote the professional development of teachers by means of the reflection on the pedagogical action according to the assumptions of the constructive-collaborative approach, centered in the elementary school; d) promote the adequate utilization of different spaces of knowledge, especially the school library, with emphasis on the development of abilities, skill to browse, and the ability to utilize the various sources of information; e) assess a methodology of a school based in-service teacher education; f) assess the formative and investigative tools constructed and utilized and g) offer contributions and guidelines for the development of pre-service and in-service teacher education programs.

In the second phase (February 2001 to January 2003) the following research questions, originated from and related to the former ones, were addressed:

How do elementary schoolteachers 'translate' the knowledge base for the first four grades of the elementary school – collectively constructed by means of a collaborative work involving partnership with university and public school? How does this 'translation' contemplate the knowledge base understood according to two levels: the explanation of the curricular contents and the consideration of an individual project of professional development? How do the schoolteachers perceive the impact of the individual projects in their pedagogical practices? What kind of contributions such different individual 'translations' – constructed considering the collective constructed knowledge base for teaching – might have considering the school as a community of learning?

The goals of this second phase of the project were:

1. To analyze different individual 'translations' of the elementary schoolteachers related to the constructed school collective project taking into account two axes:

   a) the knowledge base (specific content knowledge of different subject matters that compose the curriculum of the first four grades of the elementary school) related to the individual projects of each one of the schoolteachers, and

   b) their pedagogical practices.

2. To analyze how the schoolteachers perceive the contributions of a constructive-collaborative work that contemplates both individual and group levels, to their professional development processes.

3. To analyze the contributions of these different individual 'translations' dealt in a constructive-collaborative way, to the school as a learning community.

The participants integrated a group formed by 23 professionals from a public elementary school - State School Prof. Luiz Augusto de Oliveira / São Carlos-SP (20 schoolteachers, the principal, the pedagogical coordinator and the library assistant), 5 researchers from the Federal University of São Carlos-SP, and three specialists from different subject matters. Eighty percent of the professionals of the elementary school participated in the six years of the project. The condition for joining the second phase of the project was the participant's collaboration in its first phase, since the knowledge base of teaching was constructed during that phase. Schoolteachers and specialists received scholarships from the "Public Teaching Program"[4] sponsored by FAPESP. The project required 10 additional hours of work and study each week for the schoolteachers, including a weekly group meeting of three hours. The research group had an additional weekly meeting of four hours in order to analyze the current issues raised by the project and to plan the next activities, interventions or actions, based on a decision making process. All the participants involved are of the female gender.

Around 1200 students were enrolled in the first four grades of elementary teaching at the project's partner school, Elementary State School 'Prof. Luiz Augusto de Oliveira'. The school is located in the central region of the city of São Carlos and different social, cultural and economical backgrounds as well as diverse types of previous experiences characterize the students.

The project began as an initiative of the administrative and teaching staff of the elementary school, in order to develop a partnership with the researchers of the university, in aims to understand and overcome the difficulties and challenges faced by school. The continuation of the project (its second phase), in the same way, was the result of the school demands, in order to implement the knowledge base collectively constructed by the schoolteachers.

The biggest challenge continually faced during this research **was to construct investigative and formative strategies** that, in a processual way, provided an answer to the problem under investigation.

A significant part of the activities developed during the first year of the project was dedicated to studying the conceptions of schoolteachers with regard to the diverse aspects of the educational phenomenon, the teaching profession and the pedagogical practice. The data are being extracted predominantly from oral or written reports made by the schoolteachers and are related to these conceptions.

---

[4] The amount of the scholarship was approximately of one minimum wage.

During the first year of research we dealt with situations that could be considered as of reflection-on-action, with narratives that make beliefs, values, and personal theories of the participants evident. Relations between conception, practice and dimension of the professional development were also investigated during this period. Finally, since this project was the first collective experience in research for all the participants, a common language was established to enable the participants to communicate.

From the second year of the project on, a strategy for the promotion and investigation of learning ad professional development processes was progressively construct. This strategy proved itself to be a powerful tool for the investigation and the intervention. The promotion and the investigation of processes related to the learning and professional development of teachers, thus, could be achieved through the construction of many of these strategies, labeled by the research group as 'teaching and learning experiences'.

> They are structured situations of teaching and learning planned by the researchers and schoolteachers, implemented by the schoolteachers, collectively discussed, and originating from issues chosen by them individually or by the group. These experiences are circumscribed processes – which may imply actions involving small groups of teachers or classrooms (teachers and their students) –, usually deriving from practical difficulties related to the understanding of curricular components, school daily activities or challenges posed by public policies (Mizukami et al, 1998, p.3)

These experiences revealed themselves as a powerful strategy for intervention and shared work, allowing the development of reflective processes in different moments and levels, as much as providing data that answered the research's questions. Using these experiences as a starting point it was possible to analyze the teachers at different stages of their teaching and learning experiences; to understand specific learning by the teachers in real teaching and learning situations and specific contexts, which challenge them to reflect, verbalize their beliefs, and describe their practices, taking experience into account; to construct situations of reflection-on-action with narratives that make beliefs, values, and knowledge evident; to visualize everyday school situations that require decision making, interpretation, evaluation, and the elaboration of new plans of action from the teachers and, in a non-intrusive way, to access the classroom processes effectively developed by the teachers. With these tools it has been possible to have access to the teachers' classes focusing on the planning, implementation and assessment of concrete experiences realized during their teaching in order to better understand the pedagogical practices by them developed.

The 'teaching and learning experiences' developed during the two phases of the project were diverse and sought to encompass different aspects of the teacher work in order to make possible the investigation of the teachers' professional development processes, their ways of thinking and constructing their practices, as well as the promotion of such processes.

During the fourth year, a collectively constructed project of professional development focused on the school itself was emphasized. The main axis of this specific intervention was the Brazilian National Curriculum Guidelines for the Elementary School Teaching.

The emphasis, on the second phase of the project was given to the individual and collective translation of the school-constructed knowledge base for the elementary teaching considering the so-called transversal themes. Given the nature of these themes, the teachers were challenged to deal with all the curricular components having a transversal theme as their axis. Four experiences were planned, developed and assessed: The Water Project, The Plurality Project, The Health Project and The Sexual Orientation Project.

With decisions made during the research process, and adopting a qualitative research paradigm, most of the basic sources of data were: participant observation, interviews, reflective diaries, student produced material, minutes of the School Board meetings, oral and written reports, documents and PTA meetings. The data, which were the basic source for the collective planning of actions/interventions/investigations, were analyzed. It should be understood that this is a case of action-research.

We synthesize now these experiences in order to offer a better understanding of the whole collaborative partnership constructed by university and public school, considering two forms of presentation: the teaching and learning experiences through the whole project and each experience with its objectives and sources of data that were utilized in the research. In this way we pretend make evident both dimensions of this project: the promotion and the investigation of teachers' professional development processes.

Table 1 – Teaching and Learning Experiences developed throughout the school years*

Teaching and Learning Experience	1996 2nd	1997 1st	1997 2nd	1998 1st	1998 2nd	1999 1st	1999 2nd	2000 1st	2001 1st	2001 2nd	2002 1st	2002 2nd
Knowing the school students	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Teaching and Learning Portuguese		✓	✓									
Teaching and Learning Mathematics		✓	✓									
Teaching and Learning Sciences		✓	✓									
Constructing the school knowledge base: "What my students must know?"					✓	✓	✓	✓				
School-family interactions: "Let's help our children"		✓	✓									
Assessing and attributing grades to our students: a report of teachers' difficulties, dilemmas and expectations			✓									
Let's assess our students: constructing a common assessment tool for each grade				✓	✓							

* The school year, in Brazil, encompass two semesters: February to half July and August to December.

BEST COPY AVAILABLE

School library, the searching for references and the creation of spaces of knowledge	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hearing and telling stories children literature in perspective				✓	✓	✓						
Telling stories in the schoolyard						✓	✓					
Knowing and interpreting the Brazilian National Curriculum Standards					✓	✓	✓	✓	✓	✓	✓	✓
Specifying pedagogical discourse versus contrasting personal and collective theories		✓	✓	✓					✓	✓	✓	✓
Personal and professional stories: searching for individual and collective meanings	✓			✓			✓		✓	✓	✓	✓
Sharing Professional lives	✓					✓	✓				✓	✓
Translating a collective project into classrooms practices: the Water Project									✓			
Translating a collective project into classrooms practices: the Plurality Project										✓		
Translating a collective project into classrooms practices: the Health Project											✓	
Translating a collective project into classrooms practices: the Sexual Orientation Project												✓

Table 2 – Teaching and Learning Experiences: objectives and data sources[5]

Teaching and Learning Experiences	Objectives	Data Sources
Knowing the school students	•To analyze schoolteachers' concepts, values, attitudes, regarding their students (characteristics, learning styles, difficulties etc.) •To analyze how the schoolteachers face the challenges posed by each student in order to learn the subject matter of the different curriculum components of each grade. •To analyze how the schoolteachers, in different moments of the school year, kept (or not) their implicit theories about their students. •To create situations that reveal implicit theories of the teachers. •To construct a database that allows the faculty to follow the performance of each student and provide grounds for intervention whenever necessary.	▫ Individual reports written by the teachers (during March, June and December, containing the descriptions / analyses of each of their students and their respective learning process in the *different curriculum* components, their behavior in *the classroom and within their* families; ▫ *Grades attributed* to each student during the school year; ▫ Events related to the students that were registered by the school principal and pedagogical coordinator; ▫ PTA meetings records; ▫ Teachers' council meeting records.

[5] A specific report exists for each of the experiences

Teaching and Learning Portuguese	•To study the content specific knowledge topics considered by the schoolteachers as difficult. •To analyze students' learning difficulties in order to plan strategies to overcome them. •To create new ways to teach subject matter contents. •To analyze different learning styles presented by the students when learning specific topics. •To share experiences and understandings. •To make evident and to explore teacher and student preconceptions regarding different topics and concepts.	▫ Individual written reports about teaching difficulties; ▫ Collective written reports about difficulties and dilemmas faced by the schoolteachers in each of the four grades; ▫ Participant observation; ▫ Reports of collective meetings between researchers and teachers; ▫ Students works; ▫ Students conceptual errors; ▫ Teachers' lesson plans.
Teaching and Learning Mathematics	•To study the content specific knowledge topics considered by the schoolteachers as difficult. •To analyze students' learning difficulties in order to plan strategies to overcome them. •To create new ways to teach subject matter contents. •To analyze different learning styles presented by the students when learning specific topics. •To share experiences and understandings. •To make evident and to explore teacher and student preconceptions regarding different topics and concepts.	▫ Individual written reports about teaching difficulties; ▫ Collective written reports about difficulties and dilemmas faced by the schoolteachers in each of the four grades; ▫ Participant observation; ▫ Reports of collective meetings between researchers and teachers; ▫ Students works; ▫ Students conceptual errors; ▫ Teachers' lesson plans
Teaching and Learning Sciences	•To study the content specific knowledge topics considered by the schoolteachers as difficult. •To analyze students' learning difficulties in order to plan strategies to overcome them. •To create new ways to teach subject matter contents. •To analyze different learning styles presented by the students when learning specific topics. •To share experiences and understandings. •To make evident and to explore teacher and student preconceptions regarding different topics and concepts.	▫ Individual written reports about teaching difficulties; ▫ Collective written reports about difficulties and dilemmas faced by the schoolteachers in each of the four grades; ▫ Participant observation; ▫ Reports of collective meetings between researchers and teachers; ▫ Students works; ▫ Students conceptual errors; ▫ Teachers' lesson plans
Constructing the school knowledge base:" What my students must know?"	•To obtain answers to the following research questions: *What contents and abilities – raised by the schoolteachers individually or as a group – must be mastered by the students at the end of each of the four grades? What differences can be made clear regarding the indicated contents and abilities having in mind the four grades in consideration? What differences can be made clear through the collective answers of the schoolteachers when compared to their individual answers when the theme in discussion regards to the knowledge (specific content and abilities) that was dealt with?* •To promote individual and collective teachers' learning processes in order to reconstruct a	▫ Individual written reports from the schoolteachers, who were invited to answer a question: *What is the knowledge base that my students must possess at the end of the school year in order to perform efficiently the next grade?* This question involved the consideration of five subject matters from the official school curriculum in relation to the basic first four grades: Portuguese,

BEST COPY AVAILABLE

	curriculum to be gradually absorbed by the school as a learning community. •To find and explore organizational spaces, respecting the school culture, teachers' beliefs and personal theories on curriculum and school knowledge. •To guarantee processes of negotiation among the school teachers and other school members in order to define a specific curriculum that will be constructed and assessed by them.	Mathematics, Sciences, History and Geography; ▫ Collective written reports about a shared knowledge base for each grade; ▫ Written reports of collective discussions, which guaranteed access to all the schoolteachers of the specified knowledge base, which in turn allowed discussion of peer production, and provided the participants with a global comprehension of each of the grades and of the relations among the grades themselves. ▫ interviews (individual and collective); ▫ participant observation; ▫ documents (such as instructional material, teachers' plans, students' productions); ▫ teachers' reflective diaries.
School-family interactions: "Let's help our children"	•To face a common preconception assumed by the schoolteachers that their students' families don't have interest in their children schooling processes. •To analyze how the families conceive the school, the schooling processes and the relations with the school. •To understand the families expectations about the school and the teachers. •To discuss how to face learning difficulties from different points of view: teachers, parents, principal, pedagogical coordinator etc. This teaching and learning experience was designed to promote teacher professional development in order to overcome school failure and improve teacher quality, focusing on encouragement of parent participation. Several meetings were held between researchers and teachers to discuss parent participation in their children's school life and the need to recognize the parent's point of view about certain school-related themes.	▫ A survey directed to the families (the questions were constructed collectively by the teachers; ▫ Participant observation; ▫ The report, made by the teachers, regarding the aforementioned survey; ▫ Data drawn from collective discussions involving teachers and families.
Assessing and attributing grades to our students: a report of teachers' difficulties,	•To discuss and to share criteria of evaluation practices, considering grade and subject matter areas and topics. •To discuss aspects that may be considered objective or subjective in the assessment process; •To make explicit implicit conceptions of	This Teaching and Learning Experience investigated the teachers' decision making processes when evaluating and grading students' written work. Teachers analyzed the written work of students who were unknown to them, then

dilemmas and expectations	evaluation adopted by the schoolteachers in order to construct others more compatible with the teaching process.	produced reports indicating their perception of the author's grade level and reasons for believing it was that grade level, positive and negative aspects of the written piece; and the grade they would give for the work; ▫ Teachers' individual reports; ▫ Teachers' collective reports; ▫ Discussions considering each grade and the four grades collectively
Let's assess our students: constructing a common assessment tool for each grade	•To discuss assessment practices used by the school and the schoolteachers, considering different grades and subject matter areas and topics •To construct a common assessment tool for each grade; •To analyze the results of this tool taking into account the performance of the students of each class; •To confront different moments of the assessment process: during the establishing of common criteria for each grade and subject matter area/topic, and during the process of attributing grades, in terms of expectations, dilemmas, difficulties and challenges.	▫ written reports of teachers grouped by grades considering all the process of construction of the assessment tool; ▫ participant observation; ▫ reports from group discussions; ▫ the assessment tools of each grade; ▫ the results obtained by each class and the analysis from the comparison of such results; ▫ comparative analysis of student GPAs considering the four grades; ▫ the analysis made by the teachers related to the whole process.
School library, the searching for references and the creation of spaces of knowledge	•To improve utilization of the school library, considered as a knowledge space; •To intensify and facilitate access to books; •To construct attitudes of constant search and investigation; •To classify all the books of the school library and to acquire new ones according to the necessities of the teachers and students; •To guarantee search for reference by means of the classification of the books and respective register in the library database.	▫ reports of the librarian assistant; ▫ number of books read by the students in different moments of the project (by themes and by titles).
Hearing and telling stories: children literature in perspective	•To improve the art of telling stores by the schoolteachers; •To improve positive attitudes toward reading and writing.	▫ teachers' individual written reports; ▫ data from discussion meetings; ▫ data from new stories / books introduced in daily practices.
Telling stories in the schoolyard	•To interact with children in other spaces of the school; •To analyze the behavior, interests, motivations and types of manifestation of the students when	▫ participant observation ▫ stories told by students ▫ written reports describing the meetings taken place in

	an unusual educative practice is introduced; •To motivate students to strengthen connections with different kinds of stories, including stories from oral tradition; •To create alternative ways aiming the literacy process.	the lunch break
Knowing and interpreting the Brazilian National Curriculum Standards	To study and to discuss the Introductory Document that specifies the foundations of the new public policy for the fundamental teaching and the general organization and concepts related to each of the subject matters, as well as their interrelations and the transversal themes considered in such a level of teaching. The objectives are: •To study and to discuss the National Curriculum Standards considering the different subject matter areas. •To analyze the National Curriculum Standards having as starting point the current pedagogical practices and the teachers' possible translations of this new educational public policies; •To compare the new educational public policy with the former ones.	▫ written individual reports ▫ written collective reports ▫ verbalized pedagogical practices ▫ group discussions by grades ▫ collective discussions encompassing all grades and curriculum components
Specifying pedagogical discourse versus contrasting personal and collective theories	•Confrontation between the conceptions verbalized in two learning and teaching experiences (*What my students must know...* and *Knowing and interpreting...)* in order to construct a shared knowledge base for the school.	▫ individual written reports ▫ collective written reports ▫ participant observation ▫ interviews
Personal and professional stories: searching for individual and collective meanings	•Verbalization of the schoolteacher's personal and professional stories, and the stories of this specific professional group considering the school and public policies for education.	▫ individual written reports ▫ participant observation ▫ interviews
Sharing Professional lives	•Confrontation of personal trajectories in order to understand the related professional learning and development processes.	▫ individual written reports ▫ participant observation ▫ interviews
Translating a collective project into classrooms practices: the Water Project	•To analyze different individual 'translations' of the elementary schoolteachers related to the constructed school collective project taking into account two axes: a)the knowledge base (specific content knowledge of different subject matters that compose the curriculum of the first four grades of the elementary school) related to the individual projects of each one of the schoolteachers, and b)their pedagogical practices. •To analyze how the schoolteachers perceive the contributions of a constructive-collaborative work that contemplates both individual and group levels,	▫ participant observation ▫ oral narratives ▫ individual written reports ▫ group written reports ▫ oral narratives ▫ diary entries ▫ teachers' plans ▫ teaching cases ▫ individual and collective interviews (before, during and after the experiences) ▫ activities developed by the teachers

	to their professional development processes. •To analyze the contributions of these different individual 'translations' dealt in a constructive-collaborative way, to the school as a learning community.	▫ students' productions
Translating a collective project into classrooms practices: the Plurality Project	•To analyze different individual 'translations' of the elementary schoolteachers related to the constructed school collective project taking into account two axes: a)the knowledge base (specific content knowledge of different subject matters that compose the curriculum of the first four grades of the elementary school) related to the individual projects of each one of the schoolteachers, and b)their pedagogical practices. •To analyze how the schoolteachers perceive the contributions of a constructive-collaborative work that contemplates both individual and group levels, to their professional development processes. •To analyze the contributions of these different individual 'translations' dealt in a constructive-collaborative way, to the school as a learning community.	▫ participant observation ▫ oral narratives ▫ individual written reports ▫ group written reports ▫ oral narratives ▫ diary entries ▫ teachers' plans ▫ teaching cases ▫ individual and collective interviews (before, during and after the experiences ▫ activities developed by the teachers ▫ students' productions
Translating a collective project into classrooms practices: the Health Project	•To analyze different individual 'translations' of the elementary schoolteachers related to the constructed school collective project taking into account two axes: a) the knowledge base (specific content knowledge of different subject matters that compose the curriculum of the first four grades of the elementary school) related to the individual projects of each one of the schoolteachers, and b) their pedagogical practices. •To analyze how the schoolteachers perceive the contributions of a constructive-collaborative work that contemplates both individual and group levels, to their professional development processes. •To analyze the contributions of these different individual 'translations' dealt in a constructive-collaborative way, to the school as a learning community.	▫ participant observation ▫ oral narratives ▫ individual written reports ▫ group written reports ▫ oral narratives ▫ diary entries ▫ teachers' plans ▫ teaching cases ▫ individual and collective interviews (before, during and after the experiences ▫ activities developed by the teachers ▫ students' productions
Translating a collective project into classrooms practices: the Sexual Orientation Project	•To analyze different individual 'translations' of the elementary schoolteachers related to the constructed school collective project taking into account two axes: a) the knowledge base (specific content knowledge of different subject matters that compose the curriculum of the first four grades of the elementary school) related to the individual projects of each one of the schoolteachers, and b) their pedagogical practices.	▫ participant observation ▫ oral narratives ▫ individual written reports ▫ group written reports ▫ oral narratives ▫ diary entries ▫ teachers' plans ▫ teaching cases ▫ individual and collective interviews (before, during and

BEST COPY AVAILABLE

	•To analyze how the schoolteachers perceive the contributions of a constructive-collaborative work that contemplates both individual and group levels, to their professional development processes. •To analyze the contributions of these different individual 'translations' dealt in a constructive-collaborative way, to the school as a learning community.	after the experiences ▫ activities developed by the teachers ▫ students' productions

Many methodological questions were raised during the project's development. They predominantly referred to the process of investigation made by a team of researchers from different backgrounds and who continually performed many diverse roles. From this point of view, collaboration was understood to be a product of relations and contributions of different natures.

Wasser & Bresler (1996, p. 6) conceive interpretation as a collaborative act and utilize in their work the concept of interpretative zone, which is defined as *...the place where multiple viewpoints are held in dynamic tension as a group seeks to make sense of fieldwork issues and meanings.*

The project group was also considered to be an interpretative tool, and for that reason, the analysis made by Wasser & Bresler is pertinent. According to them, the group is a critical methodological tool, even though they admit there is lack of descriptions and dense analysis related to the interpretative process developed by groups of researchers.

> We often assume that what we know of the ways that individuals conduct qualitative research can be transferred to what groups do, but we have not truly considered the differences between these two situations and the fit or lack of fit between them (p.8).

Wasser & Bresler point out methodological questions that are critical to the interpretative processes of qualitative research and which, until now, have not been adequately contemplated by teams of researchers (p. 8). These questions were also faced in the current project (taking into consideration all of its peculiarities): What are the main ethical issues faced by the research team regarding access, confidentiality, and reciprocity? How should themes related to voices be investigated by practical and theoretical points of view? What are the costs and benefits derived from a research team? What are the credibility issues involved in the group's interpretative process? Is consensus a necessity? How can interpretative consensus be defined? How can a research group arrive at an interpretation? How can the adoption of this interpretation represent the multiple voices involved? Such questions, not yet answered, are related to the interpretative zone.

The group as an interpretative tool, according to Wasser & Bresler (p. 8), has shape, color, tone, value, style, and possesses multiple voices that work as multiple lenses. The group faces at every moment a continuous process of putting to test and clarifying those interpretations, which demonstrate how important and complex the issue related to beliefs and suppositions underlying the interpretative process is. Its members have their roles and positions changed when they observe the concerns, themes, questions, and problems of the other members. This process allows

for each member to see the data from new positions and manners. The group also faces situations that involve ambiguity and truth. Contradictions arise in the face of different types of knowledge. Uncertainties are found in problematic situations; perplexities, difficulties, and obstructions are present in the interpretative process. To Wasser & Bresler, trust as moral and political instance is of extreme importance because the dialogical inquiry must, by definition, comport a certain amount of ambiguity which can be considered in different ways, depending upon the circumstances under which they are created.

From this perspective, trust is a necessity for collaborative projects. It is, nonetheless, a complex and multifaceted notion. The kind of trust needed goes beyond mere listening and tolerance. It includes the certainty that the message of whoever speaks will be taken seriously and will, in a sense, affect the outcome of the project. There is also the trust nurtured by conversational inquiry – the one members must have for the group to tolerate ambiguity, misunderstandings, clash of points of view, and continuous discussion, even when it becomes uncomfortable to put oneself in another's shoes.

Wasser & Bresler (1999), reporting a process on a group research they have experienced, explain:

> The process of becoming a group with the specific purpose of forging interpretative meaning in our collective meetings occurred on both conscious and unconscious levels. Developing a meta-awareness of group as an interpretative tool was not an isolated occurrence; it unfolded in tandem with deepening awareness of our reflexive processes on a number of fronts. This meta-awareness provoked us to think about the ethical issues implied in the multiple roles we occupied, not only in relationship to each other, but also to those in the field to whom we were connected both directly and indirectly through the interpretative meetings. In hindsight, it has also raised questions for us about issues of costs and benefits, as well as about the ways we 'fix' our interpretation (p.11).

Methodologically speaking, this project faced dilemmas relating to what educational research literature considers as collaborative research, action-research, academic knowledge, and practical knowledge (academic research and practitioner's research), that is, academic paradigms versus practitioner's research.

By assuming a constructive-collaborative approach, we were at the same time aiming to investigate the professional development process of elementary school teachers and to promote said process for all members of the group (university and school), taking into account the peculiarities of this kind of research and the still recent dilemmas of investigations that involve researchers in the investigated situations as participants and co-authors of the actions, but also as investigators or the triggered and experienced processes: research conducted by academics versus and/or research conducted by practitioners (Schön apud Anderson & Herr, 1999; Zeichner, 1998); the epistemological status of the researches conducted by practitioners (Anderson & Herr, 1999; Zeichner, 1998); different conceptions of collaboration and collaborative research (Clark et al, 1996,1998); different meanings / concepts of action research (Elliott, 1991; Clark et al, 1996,1998), for example.

3 - RESULTS[6]

The main results of this research, analyzed according to the theoretical-methodological framework adopted, will now follow.

3.1.General

- The school teachers' thinking – expressed through oral and written reports – usually referred more directly to events than to conceptual explanations. Nevertheless, it was observed that during the development of the project, some of the teachers began to base their individual analyses considering situations as a whole, instead of focusing on the details and specifics of each event. It can also be said that attempts to obtain general rules out of particular situations continued to be made, but some of the teachers seemed to be more careful when considering extracting a concept from a single example.

- Regarding the engagement of the teachers in the process of reflecting on their practice, it was observed that when the matter of discussion was related to the foundations of their teaching, the debates, proposed questions and answers sought by the group were marked by intense participation. The type of intervention selected ensued this pattern to become more constant and involving, in consequence of strategies that generated unbalanced situations that, in turn, stimulated the growth of stronger and deeper engagement.

- Whenever theoretical matters were concerned, the participation was more restrained, and difficulties regarding verbalization appeared in much accentuated form. From the teachers' point of view, the pedagogical practice on the four initial grades of the elementary school belonged to their professional domain, while theories were left to the professional domain of the researchers.

- The concepts verbalized were analyzed through what is considered a reflective process. There are hints of the existence of different levels and types of knowledge, suggesting that the axes or continua identified might be interpreted considering reflection as conceptual orientation.

- The *teaching and learning experiences* revealed themselves as important and efficient strategies, as far as the teachers' learning is concerned. The teaching and learning processes observed were not linear, continuous, uniform and predictable. The experiences did not affect the teachers with the same intensity, nor can it be said that they have broken with the different types of resistance presented. Such experiences became important 'learning to teach' and professional development tools, since they offered all of the project participants concrete situations on which their different types of knowledge could be triggered and related. Their doubts in different fronts were highlighted, their certainties put to proof, and their implicit theories challenged.

- At the actual phase of the project most of the teachers have accepted talking about their teaching, confronting it with their peers', and discussing it in a less defensive way, objectifying it, systematizing it, suggesting strategies, allowing gradual access to their secret stories.

- Aspects related to the adult's learning have been also considered. The teachers learning process is more practical than theoretical oriented; the teachers' interests are higher when the proximity of themes, experiences, and activities to the world of practice is closer.

- The results of the research project gave repeated evidence that the construction of the pedagogical content knowledge consists the guiding light of the teachers' professional development, indicating the necessity of time and effective learning opportunities, so that the schoolteachers might rethink not only their role in the classrooms, but also their pedagogical practice, in order to overcome eventual barriers related to the construction of practices more compatible with the population that attends the school, and to the principles defended by educational public policies.

---

[6] The results of this research are presented and discussed in Mizukami et al (2002). *Escola e Aprendizagem da Docência. Processos de Investigação e Formação*. São Carlos,SP: EdUFSCar, INEP, COMPED, 2002.

- Sharing the same grade seems to be a facilitator on settling professional and personal relationships between teachers. Whether or not to teach the same grade may not make a difference when the bond between teachers is stronger. To feel somehow excluded from the group is a situation able to approximate teachers, regardless of grade, and perhaps, of worldview, at least considering some cases and moments. Furthermore, the conditions for partnership are not always the same for each member of the group.

- The dynamics adopted by the researchers might be mobilizing, catalyzing or articulating processes that are latent in the institution; the investigation of the relationships between members of the group and their position within it seems necessary.
- The situations that consider the context of the teachers' activities seem to mobilize deeper beliefs that escape the censorship of current dominant discourse exerted by, for instance, public policies. These policies have informed courses and governmental proposals and, in a way, are incorporated by the teachers in their own discourse, but not necessarily alter their beliefs and practices. Learning in specific context seems to encompass the realms of teacher education, teacher expression, and perhaps the modification of said beliefs for those who seek the meaning of teaching not only in its daily practice, but also in its social finality.

3.2. Knowledge Base

- The professional dimension of the schoolteachers' and the knowledge base for teaching by them adopted might be grounded in two content areas: Portuguese and Mathematics, in this order, even when the teachers themselves presented some difficulty to master the curricular subject matter related to these two areas. The way they teach, however, seems to be similar for these areas, grade, learning styles and students' repertoires notwithstanding. Based in content transmission, it seems to be consensual that this situation couldn't be different. Portuguese Language – especially the literacy process – seems to be the focus of the professionalism of the elementary schoolteachers. The verbalized teachers' knowledge seems to be related much more to a list of contents than to processes of construction of such knowledge. The list of contents is, otherwise, related to knowledge directly to be applied in specific classroom situations. The contents, which are not at first sight perceived by the teachers as applicable, are not by them considered. Possibly such ideas explain their constant doubts: 'how should I teach when...".

- When the 'teaching and learning experiences' concerned specific curricular contents and components, the weaving of knowledge of different sources, beliefs, goals and hypotheses underlying the pedagogical practices declared by the teachers was observed.

- Changing grades, for the teachers, seems to be an extreme factor of unbalance, at least concerning reflection on their own practices. To teach in a different grade creates professional dilemmas for many of the teachers. In order to cope with these changes the teachers frequently turn to strategies, which are similar to those from the beginning of their professional career. Such changes propitiated important situated and in-context-learning, and made the confrontation of individual practices of the teachers with those of their peers possible, which disturbed the conceptual hegemony and methodology in that grade, in favor of reframing that facilitated the construction of new practices.

- Some tendencies were observed: the low expectations regarding what is taught to the students; the non differentiation of what is indicated when what is taught when one considers each of the four grades; the attribution of greater importance to Portuguese and Mathematics in detriment of other contents, which, when brought up, seemed to constitute more a declaration of aspiration than an appropriate knowledge set, connected to goals to be aimed for and achieved. Such tendencies offered some contributions to the understanding of the process of the construction of the teachers' knowledge base for teaching. They particularly illustrate the question: 'what must the teacher know?'. They were a necessary first step towards the comprehension of how 'the teachers know what they know'. At first sight, when the teachers presented the roll of expectations, those can be interpreted as corresponding to a broader vision of the educational process, including equity and social justice. A deeper analysis of the practices declared by the teachers, nevertheless, indicates that such roll of aspirations – including the current school culture – do not translate the real

meaning of what occurs on the school's routine. An analysis that, at first sight could be considered progressive, covers a traditional and vertical pedagogical practice.

- The construction of pedagogical content knowledge (Shulman, 1986, 1987) was and has been considered by the teachers as the most important element necessary for learning to teach. Somehow, though, their fragile specific content knowledge constitutes, in different moments, an obstacle that does not allow the pedagogical content knowledge to be more articulate, rich and flexible, contemplating different transformations of the same content to different types of student (with different repertoire and learning styles). The poor mastering of the specific content knowledge, in this way, seems to influence the quality of the teachers' professional learning processes when the construction of the pedagogical content knowledge is considered.

- The pedagogical knowledge, the contents related to educational, developmental and learning theories and proposals, as well as goals and educational purposes, curriculum etc. are rarely mentioned in spontaneous fashion. It seems to be more closely related to school situations and specific contexts (particularly the classroom), than to other contexts, taking into account broader educational finalities and goals, the curriculum, families and community. It is knowledge that the teachers put to use when they try to explain their pedagogical practices, but under a set of precepts that reveal partial and episodic comprehension of such knowledge. 'Constructivism", for instance, is generally translated as a group of precepts related to instructional problems. 'Knowledge construction' is understood both as the offer of conditions that make possible student learning, and as the consideration of an abstract process of construction free of any kind of intervention ('the child will learn with time').

- The learning styles of different students, as well the heterogeneity of classrooms are rarely mentioned when the teachers try to explain learning difficulties. They seem to feel more responsible for the student's success than for the student's failure.

3.3. Partnership – Collaboration

A work process of such nature provides challenges inherent to the peculiarities of the adopted model. In that sense, the project's development revealed that:

- The inclusion of the research group into the school's environment and the construction of a shared program of professional development is a process that can be considered as of unstable balance and needing to be reworked at any given moment, thus demanding a high degree of involvement from its participants. At some points, processes of legitimization or non-legimization of the discourse over pedagogical practice became noticeable, demanding constant reviews of the dynamics of the school group that had to be rethought every step of the project, claiming redirection. The construction of partnership, under that view, implied the constant reanalysis of the schoolteachers group, the researchers' group and the whole group, constituted by all participants, in a process of continuous negotiation.

- The profe onal development of the schoolteachers was and has been not linear and revealed itself as being of processual learning. In that way, the conquers were slow, fruit of labor and arduous and systematic investment, calling for the guarantee of a common space for discussion and collective construction, considering processes of professional learning.

- The 'teaching and learning experiences' revealed themselves as powerful strategies of intervention and shared work, allowing the development of reflexive processes possible at different moments and levels. - The most evident difficulties were related to processes of implementation of educational public policies, the majority of which did not reach the school and the classrooms, or, when they did, present language, format, and concepts of difficult comprehension in what refers, mainly, to the possibility of the didactic transposition that would guarantee their incorporation in the classrooms daily activities (e. g. The Brazilian National Curriculum Standards).

- The processes experienced were slow, arduous, and involving for all of the participants. Minor changes were first steps for more significative ones, and the development of the project offered plenty indicators to support that statement.

3.4 - Some Analysis Foci: Teachers' Personal Theories, School Knowledge, Specific Content Knowledge, Pedagogical Content Knowledge and Student Knowledge

- With time, the teachers' narratives became more detailed, incorporating the specific contents worked in the classroom, and also how to work such contents. It is possible that this last aspect synthesizes the essence of teaching, since when a teacher describes his or her professional experiences, revealing what and how he or she worked with a particular student, in reality he or she is exposing his or her knowledge concerning specific and pedagogical contents, pedagogical content knowledge and the knowledge he or she has about the students.

- Although some of the dimensions of teachers' thinking may seem negative regarding some aspects of the experienced processes (such is the case when a teacher views the student as belonging to a homogeneous and non differentiated group, our yet, when the teaching is considered as something static), or positive (such is the case of the concept of school success/failure conceived as a process capable of undergoing changes as a result of students' or broader context's variables, including variables related to the undergoing teaching), these dimensions are considered as products of specific observed contexts. It is possible that the definition of these dimensions characterizes the determination of a kind of taxonomy of narratives – or the definition of different kinds of narrative and what differentiates those narratives (Fenstermacher, 1997). The previous assumption that the teachers' narratives lie onto or are supported by continua characterized by extreme opposing points seems to be alternative to the Manichian vision of the nature of the teacher's practice or of a specific way of expressing it.

- It can be inferred that a set of conceptual orientations carried by the teachers exists, and that such orientations are not always coherent when considered as part of a system. A given teacher might present contents of different natures in his or her set of conceptual orientations. This set can also contain elements that suggest a jump from a less elaborate level to a more complex one with the passage of time.

- The concepts revealed by the teachers along the process need to be better understood, since many times their meaning could be wrongly interpreted. It is believed that this set of concepts consists another starting point to the broadening of opportunities offered to both teachers, as far as their professional development is concerned, and students, as far as the teaching and learning process is concerned.

- The confrontation of the concepts verbalized by the teachers with the literature of the educational area indicates that their personal theories (if the set of beliefs, values, perspectives, attitudes and ideas developed by the teachers as consequence of their professional / personal or otherwise experiences can be so called) in many aspects match the formal theories, that is, those that result from research work regarding the practices, contexts and phenomena that are developed by means of constructs, external systems or reference frames that favor their comprehension (Knowles et al, 1994). This seems to be the case with some of the ideas presented concerning the students, learning, teaching and being a teacher, and, especially, those that refer to the student as an individual; success/failure as a process susceptible of undergoing change, as a result of variables from the students and broader contexts, including the teaching ministered; school learning as a process of socialization; teaching as a process of permanent learning, and being a teacher as a consequence of a process of collective construction of practices, learning to teach and learning to be a teacher.

- The data obtained strongly indicate the occurrence of different levels and types of knowledge, suggesting that the axes or continua identified might be interpreted as conceptual orientations, other than rigid and compartmentalized categories of the different components of teaching as pointed before: personal knowledge, professional knowledge, propositional and theoretical knowledge. The schoolteachers' concepts were many times presented through descriptive texts, which contained nothing more than the recording of events, without elements, that fundament or justify their occurrence, or yet, demonstrated a preoccupation on the acquisition of abilities in a behavioral perspective. Some of the teachers presented elements of decision making in technical

terms, so that adequate student performance is emphasized, but related to the discussion of the teachers' own performance. Other conceptions suggest the occurrence of a reflective description in which, besides the description of events, justifications based on personal judgment or alternative viewpoints are also presented, or yet, reflection-in-action in which the situation, that is, the pedagogical activity itself, is regarded as an important source of knowledge.

- The analysis of the material as a whole permitted us to understand that by describing the students and analyzing the teaching and learning process, the teachers tell stories lived by themselves as sacred and secret stories (Clandinin & Connelly, 1996). Some times, these stories have happened in the classroom. Stories at times shared by different people as well possibly a 'secret story mixed with a sacred story". It is suspected that 'sacred' and 'cover' stories possibly not always achieve an internal coherence, because it is possible that the teachers build alternate routes necessary to their professional survival. It does not seem likely that the 'cover stories' are built in consonance with the 'sacred stories'. It is possible that this kind of strategy favors the inclusion of a particular teacher in specific groups valued by the school culture.

- Little is known about the processes involved in a type of activity whose results apparently have been altered with the passage of time and the participation of teachers with different mindsets, nor how these processes work. It is believed that the teachers shifted from implicit and intuitive reflections to more systematic reflections over their pedagogical practice as well over their students.

- Taking into account the clash of the teachers' conceptions on Portuguese and Mathematics as well as the teaching of these subject matters and what is proposed by the actual educational public policies, some tendencies were verified. To talk about activities to be developed in the classroom seems to stir the teachers immediately, reinforcing something that constitutes, at first sight, the teachers' identity: *how to do*. But this perspective fades quickly, since the teachers provide counterpoints to the 'reality' to disqualify the suggestion ('that can't be done with that many students', 'easier said than done' etc.), or recognize what is said as something that they already do. It is the question of the meaning giving to the activities, which conveys the intentions and expectations concerning the schooling processes of the children and its social meaning. In consequence, the teachers' concepts function as grounding for the establishment of actions, even when the discourse apparently promotes the heterogeneity of activities.

- Analyzing a concrete activity developed by one of the teachers in his or her classroom provides an opportunity to understand the heterogeneity, the differences and divergences, and consequently to have access to a profound element of pedagogical action: the meanings given by the teachers to the activities by them developed. As research strategy, it revealed itself as being very proficuous, providing access to different meanings attributed to similar enunciations related to the functions and intentions on the teaching of Portuguese and Mathematics. Nevertheless, for their use as a strategy of in-service teacher education and of access to new knowledge and revision of positions, some elements must be considered.

- The schoolteachers, when discussing concepts, contents and conceptualizations from an activity provided by one of their peers, usually reacted strongly and silenced themselves, in apparent attempt to protect them. There was the constant risk of judgment by the school group, which provided confrontations that many times seemed nebulous to the researchers and that concerned disputes that had no direct relation to the object of the research.

- When working in small groups, by grades, the teachers appeared to demonstrate more complicity, expressing themselves more freely than when doing collective activities. There seemed to be some sort of fear for the judgment of their peers who were in charge of more advanced grades, as well as attempts not to 'judge' those of previous grades.

- The analyses made by the researchers or the theoretical confrontation / explanation configured the exposition of a 'not knowing something' of the teachers, in an uneven relation, since the theoretical references were known by the researchers and not by the teachers; the teachers' escape route from such type of situation was invariably disqualifying the researchers' affirmations by means of the specific context of the pedagogical practices related to the elementary school, from which the researchers were distant in terms of continuous immersion.

- In the context of in-service teacher education programs, to talk about the concepts and contexts detached from effective pedagogical practices – and avoiding the confrontation with the conceptions of the schoolteachers - seemed to be more successful if the intention was to make the teachers consider alternative forms to those by them adopted when conceptualizing and practicing the teaching of Portuguese and Mathematics. To offer conceptual elements to the teachers, not having the intention of 'bending' their thinking or imposing other ways of thinking seemed to guarantee a greater participation in the project, diminishing their need to defend themselves.

- There is no illusion that, by force of simple hierarchical power, the teachers have changed or will change their way or conceptualizing and practicing their teaching. There must be built, during their in-service teacher education program, a network of interactions that allows them to invest on the access of new knowledge and the reviewing of their positions, without the need to defend themselves from attempts of the imposition of changes they do not comprehend. What we usually called resistance to change seems to be much more related to the teachers' resistance of being dispossessed of their knowledge (knowledge learned from experience, but also knowledge they came in contact with during their initial formation).

-The confrontation of conceptions allowed the teachers to make clear to themselves what they thought and to note the differences and divergences between them, along with what is proposed by the actual public policies. But this dynamic demands time, the tightening of relationships and the guarantee of the possibility of the existence of diverse ways of thinking and acting in a school.

In a similar way to that faced by Wasser & Bresler (1998), the present research group was initially seen as having a fixed structure in the project. However, this structure went through changes when members started to create an identity for the group: by assuming different commitments, creating rituals and routines in order to give it form (labeling activities, structuring meetings, publishing reports, etc.), and making explicit group related values. During the six years of this project the participants have given interpretative meanings, raised ideas, contested opinions, redirected processes, reaffirmed or reformulated convictions, etc., in ways that make it impossible, currently, to establish clear lines between individual contributions. Many of the individual contributions were possible only through the group. The construction of the group process and of the group itself as an interpretative tool went through various individual and collective understandings which generated many changes to the project which in turn redirected it to the investigated problem as well as to the formative and investigative processes under consideration. The professional development process, previously seen as unidirectional, became known as bi-directional, that is part of individual and group work. The interpretations that, in the beginning tended to be more topics oriented started to assume a process orientation. The project had also undergone different processes of decision-making, which affected the group construction in relation to the theoretical and methodological orientations to be adopted. During this process, the concept of interpretative zone was especially important to understanding the different group dynamics. The processes lived through the project were slow, arduous, and engrossing to all the participants. The development of the project offered evidence that supports this statement. The progress and success achieved were non-linear to every person involved.

REFEREMCES

Anderson, G. L., Herr, K. (1999) The new paradigm wars: Is there room for rigorous practitioner knowledge in schools and universities? *Educational Researcher*, 28 (5), p. 12-21,40.

Argyris, C., Schön, D. A. (1996) *Organizational learning II. Theory, method, and practice*. Reading (Ma): Addison-Wesley.

Baird, J. R. (1997) *Orientaciones para un efectivo desarrollo profesional del docente. Lecciones basadas en investigaciones realizadas en escuelas australianas*. Seminario Internacional de Formación de Profesores. Ministerio de Educación de Chile, UNESCO / OREALC.

Bayne-Jardine, C. Supporting self-developing schools. In: C. Bayne-Jardine & P. HOLLY (Eds). Developing Quality Schools. London: Falmer Press.

BEST COPY AVAILABLE

Calderhead, J. (1993) Dilemmas in developing reflective teaching. *Teacher Education Quarterly*, 20 (1), p.93-100.

Calderhead, J. (1996) Teachers: beliefs and knowledge structures and comprehension processes. In Calderhead, J.; Calfee, R. C. (ed). *Exploring teachers' thinking*. New York: Macmillan, 709-725.

Clandinin, D. J.; Connelly, F. M. (1996) Teacher's Professional Knowledge Landscapes: Teacher-Stories - Stories of Teachers - School Stories - Stories of Schools. *Educational Researcher*, 25 (3), p.24 - 30.

Clandinin, D. J. (1986). *Classroom practice: teacher images in action*. Philadelphia: Falmer Press.

Clark, C. M.; Peterson, P. L.(1986). Teachers' thought processes. In M. C. Wittrock (Ed.), *The Handbook of Research on Teaching*. New York: Macmillan, 255-296.

Clark, C., et al. (1996) Collaboration as dialogue: Teacher and researchers engaged in conversation and professional development. In *American Educational Research Journal*, 33 (1), p. 193-232.

Clark, C., et al. (1998) Continuing the dialogue on collaboration. *American Educational Research Journal*, 1998, 37 (4) pp. 785-791.

Cole, A.L. & Knowles, J.G. (1993) Teacher development partnership research: A focus on methods and issues. *American Educational Research Journal*, 30 (3), 473-495.

Connelly, F.M., Clandinin, D.J. (1988). *Teachers as curriculum planners: narratives of experience*. New York: Teachers College Columbia University.

Darling-Hammond, L. (ed.). (1994) *Review of Research in Education*. Washington, American Educational Research Association, v.20.

Doyle, W. (1990). Case methods in the education of teachers. *Teacher Education Quarterly* 17 (1), 7-16.

Elbaz, F. (1983). *Teacher thinking: a study of practical knowledge*. London: Croom Helm.

Elliott, J. (1991). *Action research for educational change*. London, Open University Press.

Fenstermacher, G.D. (1994). The knower and the known: the nature of knowledge in research on teaching. *Review of Research in Education*. 20, 3-56.

Fenstermacher, G. D. (1997) On narrative. *Teaching and Teacher Education*, 13,1,119-124.

Gimeno Sacristán, J. (1995). Currículo e Diversidade Cultural. In: T.T. da Silva e A.F. Moreira (Org.) - *Territórios contestados: o currículo e os novos mapas políticos e culturais* - Petrópolis, RJ: Vozes.

Giroux, H. A. (1997). *Os professores como intelectuais*. Porto Alegre: Artes Médicas.

Grimmett, P. P.; Erickson, G. L. (Ed.). (1988). *Reflections in teacher education*. New York, Teachers College Press.

Huberman, H. (1993). *The live of teachers*. London, Cassell and New York: Teachers' College Press.

Knowles, G., Cole, A. & Presswood, C. S. (1994). *Through preservice teachers' eyes. Exploring field experiences through narrative & inquiry*. New York: MacMillan.

Marcelo, C. (1998) Pesquisa sobre a formação de professores. *Revista Brasileira de Educação*. 9, p. 51-75.

McDiarmid, G. W. (1995). *Realizing new learning for all students: a framework for the professional development of Kentucky Teachers*. National Center for Research on Teacher Learning, NCRTL.

Mizukami, M.G.N., Reali, A.M.M.R., Reyes, C.R., Lima, E.F. de, Martucci, E.M., Tancredi, R.M.S.P., Mello, R.R. de. *Escola e Aprendizagem da Docência: Processos de Investigação e Formação*. São Carlos,SP: EdUFSCar,INEP, COMPED, 2002.

Mizukami, M.G.N., Reali, A.M.M.R., Reyes, C.R., Lima, E.F., Martucci, E.M., Abib, M.L.V.S., Mello, R.R. & Tancredi, R.M.S.P. *A reflexão sobre a ação pedagógica como estratégia de modificação da escola pública elementar numa perspectiva de formação continuada no local de trabalho*. Relatório de Pesquisa 2. FAPESP / Programa Ensino Público, 1998.

Nóvoa, A. (Org.) (1992) *Os professores e sua formação*. Lisboa: Dom Quixote.

Schön, D. (1987) *Educating the reflective practitioner*. San Francisco: Jossey Bass.

Schön, D. (1983) *The reflective practitioner*. New York: Basic Books.

Schön, D. Coaching reflective teaching. In P.P. Grimmett &G.L. Erickson (Eds.). (1988). *Reflections in teacher education*. New York: Teachers College Press, 19-29.

Schoenfeld, A.H. (1997) Toward a theory of teaching-in-context.
http://www.gse.berkeley.edu/Faculty/aschoenfeld/TeachInContext/teaching-in-context.html

Shulman, L. (1996) Just in case: reflections on learning from experience. In Colbert, J., Trimble, K. and Desberg, P. (ed.) The *case for education: contemporary approaches for using case methods*. Needham Heights: Allyn & Bacon, p. 197-217.

Shulman, L. S. (1986) Those who understands: knowledge growth in teaching. *Educational Researcher*, 17 (1), p.4-14.

Shulman, L. S. (1987) Knowledge and teaching: foundations of a new reform. *Harvard Educational Review*, 57 (1).

Shulman, L. (1992) Toward a pedagogy of cases. In J. Shulman, J. (Ed.) *Case methods in teacher education*. New York: Teachers College Press, 1-30.

Shulman, J.H. (1992). Case methods in teacher education. New York: Teachers College Press.

Tardif, M., Lessard, C. & Lahaye, L. (1991). Os professores face ao saber. Esboço de uma problemática do saber docente. *Teoria e Educação*, 4, 1991.

Torres, R.M. (1998). Tendências da Formação Docente nos Anos 90. In M.J.Warde (Org.) *Novas Políticas Educacionais: Críticas e Perspectivas*. II Seminário Internacional. PUC-SP, 173-191.

Torres, R. M. (1999). Nuevo rol docente: qué modelo de formación, para qué modelo educativo? In Fundación Santillana. *Aprender para el futuro. Nuevo marco de la tarea docente*. Documentos en Debate. Madrid, 99-112.

Valli, L. (ed) (1992). *Reflective Teacher Educatıon, cases and critiques*. New York: State University of New York Press.

Wilson,S., Shulman,L.S. & Richert ,A.E. (1987). 150 ways of knowing: representations of knowledge in teaching. In J. Calderhead (Ed.), *Exploring teachers' thinking*. Great Britain: Cassell Educational Limited, 104-124.

Wittrock, M. C. (Ed). (1986). *The Handbook of Research on Teaching*. New York, Macmillan.

Wasser, J. D.; Bresler, (1996). Working in the interpretative zone: conceptualizing collaboration in qualitative research teams. *Educational Researcher*, 25 (5), p.5-15.

Wassermann, S. *Getting down to cases: learning to teach with case studies*. New York: Teachers College Press, 1993.

Zeichner, K. (1993). *A formação reflexiva de professores: idéias e práticas*. Lisboa: Educa, 1993.

Maria da Graça Nicoletti Mizukami
dmgn@power.ufscar.br
gramizuka@terra.com.b

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

ERIC Educational Resources Information Center

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: PROMOTING AND INVESTIGATING PROFESSIONAL DEVELOPMENT OF ELEMENTARY SCHOOL TEACHERS: CONTRIBUTIONS OF A SIX-YEAR PUBLIC SCHOOL - UNIVERSITY COLLABORATIVE PARTNERSHIP	
Author(s): MIZUKAMI, M.G.N.; REALI, A.M.M.R.; REYES, C.R.; FREITAS, E.L.; TANCREDI, R.M.S.	
Corporate Source: PAPER PRESENTED AT THE 2003 AERA ANNUAL MEETING - CHICAGO 2003	Publication Date: APRIL, 2003

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1

☑

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A

☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B

☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, please

Signature:	Printed Name/Position/Title: PROF / Dr MARIA DA GRAÇA NICOLETTI MIZUKAMI
Organization/Address: UNIVERSIDADE FEDERAL DE SÃO CARLOS Rua VIRGILIO POZZI 364 13564-040 SÃO CARLOS - SP BRAZIL	Telephone: 55 16 2724962 FAX: 55 16 2608372 E-Mail Address: dmgn@power.ufscar.br grimizuka@terra.com.br Date: 04/23/2003

(Over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse: **University of Maryland**
ERIC Clearinghouse on Assessment and Evaluation
1129 Shriver Lab, Bldg 075
College Park, MD 20742
Attn: Acquisitions

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

University of Maryland
ERIC Clearinghouse on Assessment and Evaluation
1129 Shriver Lab, Bldg 075
College Park, MD 20742
Attn: Acquisitions